Insight versus Effort. Communicating the Creative Process Leading to New Products

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Abstract

Studies of the creative process identify two relevant sources of new ideas and products: Insight, a sudden, dreamlike, illuminating experience; and effort, deliberate, structured, hard work. With the aim of investigating the communication of the creative process, this research proposes that consumers hold associations between insight and arts, and between effort and sciences. These lay theories induce differential evaluations of new products: consumers evaluate more favorably artistic and scientific products presented as the outcome of insight or effort, respectively. The strength of the proposed effects, however, depends on the level of consumer expertise in the relevant product domain. We maintain that, as audience expertise increases, lay theories become less relevant and the effects of creative process narratives are attenuated. Five studies support the proposed conceptual framework and show that narratives of the creative process influence the evaluations of new products, depending on the product domain and on consumer expertise.

Keywords: *Creativity; Insight; Effort; New products; Communication; Narratives.*

1. Introduction

With the widespread diffusion of disintermediation across industries, companies are increasingly relying on storytelling and pitching to inform consumers about the launch of new products, or to involve them in crowdfunding campaigns (e.g., Brown, Boon, & Pitt, 2017; Clingingsmith & Shane, 2018; Dessart, 2018; Manning & Bejarano, 2017; Short et al., 2017; Wang, Noble, Dahl, & Park, 2019). Also television and radio shows, such as VH1's *Storytellers*, and BBC's *The Life Scientific*, feature artists and scientists explaining how they came up with new products, discoveries, and ideas. Frequently, these messages include a 'genesis' story, describing the *process* underlying the generation of the new products and ventures (Clingingsmith & Shane, 2018; Hamby, Brinberg, & Daniloski, 2017; Wang et al., 2019).

These communication activities represent an important stage in many theoretical models of the creative process (Amabile, 1996; Simonton, 2000; Stein, 1974). By exposing consumers to information they would not normally be able to observe, narratives of the creative process may enhance both process transparency and empathy between creators and their audiences, which in turn may affect positively attitudes towards the products and quality inferences (Baas et al., 2015; Buell, Kim, & Tsay, 2017; Fuchs, Schreier, & van Osselaer, 2015; Kruger, Wirtz, van Boven, & Altermatt, 2004; Mourgues et al., 2016). Despite the importance of these messages and of their potential benefits, limited research has examined what features may make them most effective. Research on the effectiveness of pitches has mostly examined characteristics of the story-tellers, such as their use of impression management techniques, or their ability to convey passion (Brooks, Huang, Kearney, & Murray, 2014; Chen, Yao, & Kohta, 2009; Parhankangas & Ehrlich, 2014; Nagy, Pollack, Rutherford, & Lohrke, 2012). More recent research in marketing has shown that exposing consumers to information on different aspects of a product's creation

can influence consumers' evaluations (Fuchs, Schreier, & van Osselaer, 2015; Reich, Kupor, & Smith, 2017; Nishikawa, Schreier, Fuchs, & Ogawa, 2017). In this paper, we build on this stream of research by focusing on the content of product genesis messages, and examine the effects of different types of creative process narratives on consumers' evaluations of new products. The literature on creativity (e.g., Lubart, 2001; Wallas, 1926) postulates that the process leading to a new product involves both *insight* – illuminating moments in which ideas are generated, and *effort*, rigorous, hard-work stages in which ideas are developed, executed, and implemented (Burgmer, Forstmann, & Stavrova, 2019; Lucas & Nordgren, 2015; Schooler, Fallshore, & Fiore, 1995). We examine whether describing a new product as the outcome of insight or of effort leads consumers to evaluate it more favorably.

On the one hand, research in psychology has demonstrated that objects are deemed more valuable the more effort was invested into their creation (Kruger et al., 2004); individuals who contributed effort towards the creation of an object are perceived as more important and compensation-worthy than individuals who contributed ideas (Burgmer et al., 2019). On the other hand, studies on implicit theories of creativity suggest the existence of a lay belief that creative outputs are more likely to be produced unexpectedly (i.e., through insight) rather than through conscious thinking and effort (Baas et al., 2015). A quantitative content analysis of "The Creative Process" (Ghiselin, 1985), an edited book collecting 38 narratives of creative processes, indicates that creators themselves may share this belief. Both artists (n = 31) and scientists (n = 7) tend to emphasize insight rather than effort, as measured by the frequencies of insight-related words and effort-related words used to describe the genesis of their creations (see Appendix A for more detail).

This paper extends the study of implicit theories of creativity by investigating consumers' beliefs on the factors leading to novel outputs in different domains, and by examining the effects of these beliefs on the evaluations of new products described as the outcomes of these factors. We propose that consumers tend to believe that insight is more conducive to the creation of new artistic products than effort, and that effort is more conducive to the creation of scientific products than insight. These lay theories induce higher evaluations of artistic products described using insight-based narratives and of scientific products described using effort-based narratives. We further maintain, however, that these effects are attenuated as consumer expertise in the product domain increases. Five studies support this conceptual framework and suggest directions for the choice of effective narratives to present the creative process leading to new products in different domains and to audiences with different levels of expertise.

In the following sections, we first define the concepts of insight and effort within the creative process. We then review literature that has examined the relationship between information on product creation and product preference. Next, we outline our conceptual framework and formulate hypotheses on the conditions under which consumers are most likely to favor products described using insight-based vs. effort-based narratives of the creative process. Finally, we test our hypotheses in five studies that document consumer responses to insight-based and effort-based narratives of the process leading to the creation of new products in artistic and scientific domains, examine the mechanism underlying these responses, and test a boundary condition based on domain-specific expertise.

2. Conceptual Framework

We define narratives of the creative process as messages in which the creator describes the sequence of events and activities that led to the creation of a new product (Lubart, 2001; Wallas, 1926). In this research, we propose that the narrative used to describe a new product genesis will influence consumer responses. We examine the effects of two types of narratives, one emphasizing the *insight* leading to the new product, which we define as the sudden, dream-like, spontaneous, and illuminating experience facilitating the emergence of new product ideas (Schooler et al., 1995); the other emphasizing the *effort* deployed toward the development of the idea, which we define as the methodical, planned, rational, and hard work through which creators organize ideas and develop them into new products (Lucas & Nordgren, 2015).

Creators can emphasize either insight or effort in their narratives of the creative process (Baas et al., 2013; Baas et al., 2015; Runco & Bahleda, 1986). We argue that consumers will interpret such narratives differently depending on their implicit theories of creativity. Implicit theories are beliefs held by individuals, which affect their expectations and behaviors (Sternberg, 1985; Vanouche & Alba, 2009; Wright et al., 2013). Implicit theories of creativity (e.g., O'Connor, Nemeth, & Akutsu, 2013; Runco & Bahleda, 1986) concern lay beliefs on the genesis of creative products and can influence product evaluations due to reliance on stereotypical knowledge and heuristics (Levy, Stroessner, & Dweck, 1998; Sternberg, 1985).

We argue that consumers' implicit theories of creativity depend on the domain of the creative application. We focus on the two main domains in which manifestations of creativity are observable: *arts* and *sciences* (e.g., Feist, 1998; Ghiselin, 1985; Suler, 1980). Arts–visual, literary, musical, and performing arts–are "*imaginative, creative, and nonscientific branches of knowledge considered collectively, esp. as studied academically*[1]," and express beauty and emotion (Bullot & Reber, 2013). Artistic products are often emotion-laden, are valued in terms

of aesthetics per se (Holbrook & Hirschman, 1982), and are characterized by abstraction and subjective consumption experiences (Hirschman, 1983). Sciences–natural, social, formal, applied sciences–are "*the systematic study of the nature and behavior of the material and physical universe, based on observation, experiment, and measurement, and the formulation of laws to describe these facts in general terms*[2]." Scientific products are the outcomes of logical or analytic work methods (Weisberg, 2006), and are valued in terms of utilitarian value and adherence to structured knowledge schemes (Simonton, 2003).

Few studies hint at potential differences on the associations between arts and sciences and different types of creative process. Meta-analytic evidence suggests that artists are norm-doubting and imaginative, whereas scientists tend to be more conscientious and focused (Feist, 1998). Different traits are systematically associated with the creation of artistic (e.g., expressive, imaginative, original) and scientific (e.g., perfectionist, intelligent, curious) products (Runco & Bahleda, 1986). Philosophers and artists themselves have historically contributed to associate arts with a creative process based on the "divine muse" and inspiration (Rothenberg, 1970). Science, conversely, is related by definition to the implementation of the scientific method, to experimentation and formal procedures, and to deliberate and structured processes (Runco & Bahleda, 1986). These considerations support the idea that consumers hold domain-specific beliefs on the type of creative process necessary to create new products: The genesis of an artistic product requires the intervention of insight (Kasof, 1995; Rothenberg, 1970) and the genesis of a scientific product requires the intervention of effort (Lucas & Nordgren, 2015). Formally,

H1a: Consumers believe that artistic products are more the outcome of insight than of effort.

H1b: Consumers believe that scientific products are more the outcome of effort than of insight.

Research has shown that exposing consumers to information on different aspects of the creative process influences their evaluations of a new product. For example, exposing consumers to a representation of the physical and mental work being conducted to provide a service makes them value the service more, more satisfied, and more willing to repurchase (Buell & Norton, 2011). Similarly, providing consumers with information on the time taken to create a product influences quality perceptions, attitudes, and willingness to pay (Kruger et al., 2004). Telling consumers that a product was made by hand (vs. machine made vs. providing no information on the nature of the creation process) increases product attractiveness and willingness to pay (Fuchs et al., 2015). Also, disclosing the occurrence of a mistake during the creative process makes consumers perceive the product as more unique in comparison to an otherwise identical product created intentionally, and makes them willing to pay more for it in domains where uniqueness is desirable (Reich, Kupor, & Smith, 2017). Describing a product as created based on other customers' ideas (crowdsourced) makes consumers more likely to buy it, as they think it will address their needs more effectively than virtually identical products described as created by the company's designers (Nishikawa, Schreier, Fuchs, & Ogawa, 2017). Even disclosing the costs associated with the production of a product or the provision of a service increases consumers' attraction to the firm and, in turn, their probability of making a purchase (Mohan, Buell, & John, 2018).

In line with this stream of research, which implies that disclosing information on a product creation can influence consumer responses, we contend that narratives of the creative process attributing the new product to insight or to effort will influence product evaluations. An artistic

product may be perceived as more valuable if it is described as the outcome of insight. Indeed, properties of insight, such as its spontaneity and uncontrollability (Morewedge, Giblin, & Norton, 2014), may induce greater perceptions of uniqueness and originality, which are desirable qualities of artistic products (Haertel & Carbon, 2014; Hagtvedt, Patrick, & Hagtvedt, 2008; Kozbelt, 2004) compared to the structured procedures associated with the scientific method (Simonton, 2003). Properties of effort, such as methodical, planned, and rational hard-work, are instead more positively associated with scientific domains. Scientific products are valued based on functionality and objective utility (Weisberg, 2006), and these criteria fit better with effort than with insight. Consequently, we expect that consumers evaluate more favorably artistic products presented using an insight-based narrative, and scientific products presented using an effort-based narrative. Formally,

H2: The effect of creative process narratives on consumer evaluations of a new product is moderated by the product domain. Specifically, a) artistic products are evaluated more favorably when presented with insight-based narratives than with effort-based narratives, and b) scientific products are evaluated more favorably when presented with effort-based narratives than with insight-based narratives.

These effects are mediated by the strength of the lay theories postulated by H1a and H1b, that is, the extents to which consumers believe that art is associated with insight and science with effort. Formally,

H3: The effect of creative process narratives on consumer evaluations of a new product, moderated by the product domain, is mediated by the lay theories on the insight-art and effort-science associations.

We further propose that responses to narratives of the creative process depend on the level of consumer expertise in the specific product domain. Experts have better-defined, domain-specific knowledge structures than novices, and are more likely to process information analytically and less likely to rely on heuristics, stereotypes, and lay theories (Alba & Hutchinson, 1987; Gregan-Paxton & John, 1997; Peracchio & Tybout, 1996). Literature on knowledge organization suggests that experts are more likely to use analytical processing and evaluate objective information about new products than novices, who instead have more limited and less structured domain knowledge (Gregan-Paxton & John, 1997; Moreau, Lehmann, & Markman, 2001). Domain-specific expertise provides the cognitive foundation that enables one to engage in cognitively rigorous elaboration (Petty & Cacioppo, 1986; Petty & Wegener, 1998). Accordingly, expert evaluations of new products are less likely to be guided by lay theories on the creative process than non-expert evaluations. This idea implies that, in artistic domains, the effect of insight-based narratives of the creative process on product evaluations may decrease as expertise increases. In scientific domains, the same pattern will be observed for effort-based narratives. Consequently, we expect that the effect of the type of creative process narrative on evaluations of artistic and scientific products will be attenuated as consumer expertise increases. Formally,

H4a: The effect of creative process narratives on consumer evaluations of new artistic products is moderated by consumer expertise. Specifically, as consumer expertise increases, the advantage of insight-based narratives over effort-based narratives decreases.

H4b: The effect of creative process narratives on consumer evaluations of new scientific products is moderated by consumer expertise. Specifically, as consumer expertise increases, the advantage of effort-based narratives over insight-based narratives decreases.

3. Empirical Studies

We tested our conceptual framework in a series of studies. Studies 1A and 1B tested the existence of lay theories on the associations between insight and artistic domains, and between effort and scientific domains (H1a and H1b). Study 2 tested the prediction that the effects of insight-based versus effort-based narratives of the creative process on evaluations of a new product depend on whether the product is either artistic or scientific (H2). To eliminate potential confounds due to intrinsic differences between artistic and scientific products, we kept the product constant but framed it as artistic or scientific. Study 2 also tested the mediating role of the lay theories on the associations between the type of creative process narrative and the type of product (H3). Studies 3A and 3B investigated the effects of insight-based versus effort-based narratives of the creative process on evaluations of an artistic and a scientific product, respectively, and verified the moderating role of domain-specific expertise (H4a and H4b).

Since the sizes of the effects investigated were unknown, when recruiting participants for experimental studies from crowdsourcing platforms (Prolific Academic), we followed the guidelines by Simmons, Nelson, and Simonsohn (2013) and collected more than 50 participants

per condition. For studies conducted on a student population, data were collected on students of full sections of specific marketing or management courses. In study 3A, which required participants to listen to a song, we excluded participants who failed an audio-test at the beginning of the study. For all studies, we analyzed the data only at the end of the data collection. We report all manipulations in the Appendix B and all measures in the procedure sections.

3.1 Study 1A

Study 1A tested H1a and H1b. Participants read the descriptions of successful new products in ten artistic or scientific domains and rated the extents to which they attributed the creation of each product to insight and effort.

Participants and procedure. One hundred and two participants based in the US were recruited on Prolific Academic (34.30% female; M_{age} = 31.59, SD_{age} = 9.63), and received £.60 as compensation to answer a short online survey on the evaluation of artistic and scientific products. Participants were first presented with definitions of insight-based and effort-based creative processes (*"An artistic/scientific product based on insight was created thanks to a sudden inspiration, intuition, unexpected vision, and unplanned behavior;" "An artistic/scientific product based on effort was created thanks to hard and intense work, meticulous study, trial and error, and planned actions."*). These definitions were displayed also during the rest of the survey, in which the ten products were presented in random order. Five products belonged to artistic domains (a painting, a poem, a song, a sculpture, a piano composition) and five to scientific domains (a math theorem, a gluing system, a software application, a construction material, a statistical analysis). Examples of descriptions[3] of one artistic product and one scientific product are reported below.

Artistic product

An indie-rock band from Australia, The Zuminars, has recently released its new single, “Travelling.” The song received good reviews from the national music magazines and obtained "The best new indie song" award in January 2015.

Scientific product

Theo Walters, a mathematician from the US, has recently presented his new theorem on differential equations. The theorem was well received at the Conference of the American Society of Mathematics, and has been published in a leading Mathematics journal.

For each product, participants indicated the extents to which they believed the new product was the outcome of insight and effort using two 100-point sliders (0 = *not at all*; 100 = *completely*). Finally, participants reported their gender and age.

Results and discussion. Figure 1 reports the average insight and effort ratings for the ten artistic and scientific products. We first examined the average ratings across all the artistic products and all the scientific products.

--- Figure 1 about here ---

Overall, artistic products received higher insight ratings than effort ratings ($M_{Insight}$ = 78.57, $SD_{Insight}$ = 14.37; M_{Effort} = 67.48, SD_{Effort} = 16.98; *paired samples* $t(101) = 5.71$, $p < .001$, $\eta_p^2 = .11$), and scientific products received higher effort ratings than insight ratings ($M_{Insight}$ = 61.88, $SD_{Insight}$ = 24.26; M_{Effort} = 84.25, SD_{Effort} = 11.26; *paired samples* $t(101) = -8.33$, $p < .001$, $\eta_p^2 = .26$). We then conducted a two-way repeated-measures ANOVA on the individual insight and effort ratings using the type of creative process (insight-based vs. effort-based) and the product

replicates (the ten domains) as within-subject factors. The results show a significant main effect of type of creative process ($F(1,101) = 12.71$, $p = .001$), which was qualified by a significant type of creative process × product replicates interaction effect ($F(9,909) = 40.30$, $p < .001$). The main effect of product replicates was not significant ($F(9,909) = .64$, $p = .76$). Planned comparisons show that all artistic products received higher insight ratings than all scientific products (all $|t\text{s}| > 3.42$, $p\text{s} < .001$), and that all scientific products received higher effort ratings than all artistic products (all $|t\text{s}| > 5.07$, $p\text{s} < .001$). For each artistic product, insight ratings were significantly higher than effort ratings ($ps < .01$) except for sculpture ($p = .19$), and for each scientific product, effort ratings were significantly higher than insight ratings (all $ps < .01$). Overall, these results support the existence of lay theories on the associations between insight and arts, and between effort and sciences, and provide support to H1a and H1b.

3.2 Study 1B

Study 1B used a different approach to test the lay theories on the insight-art and effort-science associations. Participants were asked to associate claims on the creation of a new product with artists and/or scientists. The associations collected were analyzed using a correspondence analysis, which is a technique that allows to analyze a cross-tab of two multinomial variables (i.e., a row-variable and a column-variable), to extract dimensions synthesizing the column points through a singular value decomposition procedure, and to compute dimensions' scores for each row point (Greenacre, 2007).

Participants and procedure. Undergraduates majoring in business at a large European University ($N = 52$, 69.23% female, $M_{age} = 21.54$, $SD_{age} = 1.57$) participated in a short online survey in exchange for course credit. Participants read, in random order, 16 claims describing the creation

of a new product and associated each claim with up to two out of twelve possible creators (six artists: a painter, a poet, a rock band, a sculptor, a movie director, a pianist; and six scientists: a psychologist, a chemist, a computer scientist, a mechanical engineer, a mathematician, a statistician). Six claims were insight-based (e.g., "This new product is the outcome of a sudden inspiration"), six were effort-based (e.g., "This new product is the outcome of high effort"), and four were decoy claims (e.g., "This new product is the outcome of my specific competences".) Finally, participants reported their gender and age.

Results and discussion. Participants expressed a total of 1462 associations that were organized in a 12×16 cross-tab. A chi-square test ($\chi^2(165) = 1350.26$, $p < .001$) indicated that creators and claims were significantly associated with each other, and that their associations could be analyzed by means of correspondence analysis. A row-normalization analysis showed that the first dimension explained 61% of inertia (i.e., spatial variance), while subsequent dimensions explained less than 15% each. Therefore, we focused only on the first dimension extracted, which showed positive column scores on insight-based claims ("This new product is the outcome of a sudden inspiration" = 1.61; "This product is the result of feelings and moods experienced in a specific moment" = 1.62; "This product derives from an unexpected, dreamlike vision" = 1.39) and negative column scores on effort-based claims ("This new product is the outcome of meticulous application" = - .97; "This product is the result of planned study" = - 1.07; "This product is the outcome of rationality and method" = - 1.05). Accordingly, we interpreted the first extracted dimension as a bipolar scale, with negative values corresponding to high effort and positive values corresponding to high insight. Figure 2 reports effort versus insight scores for the twelve artists and scientists.

--- Figure 2 about here ---

Artists consistently exhibited positive scores, whereas scientists exhibited negative scores. These results provide further support to H1a and H1b, that is, consumers tend to associate insight with arts, and effort with sciences.

3.3 Study 2

Study 2 aimed to test H2 and H3. We used a 2 (creative process narrative: insight-based vs. effort-based) by 2 (product description: artistic vs. scientific) between-subjects design and measured lay theories on the perceived associations between insight/effort and art/science.

Participants and procedure. Four hundred and fourteen participants based in the UK were recruited from Prolific Academic (63.00% female; M_{age} = 34.97, SD_{age} = 11.46), and received £.60 as compensation. Participants read a brief press release about a new sweatshirt – described using either an insight- or an effort-based narrative of the creative process. To avoid confounds due to the specificities of artistic and scientific products, we used a single product and described it either as artistic or as scientific. The stimuli are available in Appendix B. Afterwards, participants evaluated the sweatshirt (1 = *do not like it at all*, 7 = *like it a lot*), and indicated how much they would pay to buy it (WTP – from £0 to £200). Participants then answered four 7-point Likert scales on lay theories, measuring the extent to which the press release was consistent with the domain corresponding to participants' condition ("*The press release is consistent with an artistic/scientific product*"; "*The press release is appropriate for an artistic/scientific product*"; "*The press release is suitable for an artistic/scientific product*"; "*The press release is fitting with an artistic/scientific product*" – α = .96). Participants then answered a set of six manipulation

checks (1 = *not at all*, 7 = *completely*) on the extents to which the sweatshirt was the outcome of insight (inspiration, instinct, sudden intuition – α = .77), and effort (intense work, planning, and meticulous care – α = .92), and a bipolar manipulation check for the product description ("*To what extent do you think that the new Wave Sweatshirt is an artistic or a scientific product?* 1 = *certainly artistic*, 10 = *certainly scientific*".) Finally, they reported their age and gender.

Results and discussion. The manipulation of the creative process narrative was successful. A two-way ANOVA on insight scores revealed a main effect of creative process narrative ($M_{Insight}$ = 4.55, $SD_{Insight}$ = 1.32; M_{Effort} = 3.37, SD_{Effort} = 1.31; $F(1,410) = 85.93$, $p < .001$, $\eta_p^2 = .17$), and unexpected but considerably weaker main effect of product description ($M_{Artistic}$ = 4.13, $SD_{Artistic}$ = 1.44; $M_{Scientific}$ = 3.79, $SD_{Scientific}$ = 1.43; $F(1,410) = 7.02$, $p = .008$, $\eta_p^2 = .02$) and interaction effect ($F(1,410) = 8.42$, $p = .004$, $\eta_p^2 = .02$). Importantly, for both the artistic and scientific product conditions, insight scores were higher in the insight-based narrative conditions than in the effort-based narrative conditions (*ps* < .001). A two-way ANOVA on effort scores revealed a main effect of creative process narrative ($M_{Insight}$ = 3.81, $SD_{Insight}$ = 1.35; M_{Effort} = 4.99, SD_{Effort} = 1.46; $F(1,410) = 73.51$, $p < .001$, $\eta_p^2 = .15$), and an unexpected but considerably weaker interaction effect ($F(1,410) = 4.50$, $p = .034$, $\eta_p^2 = .01$). Importantly, in both the artistic and scientific product conditions, effort scores were higher in the effort-based narrative conditions than in the insight-based narrative conditions (*ps* < .001). The main effect of product description ($F(1,410) = .67$, $p = .41$) was not significant. Therefore, participants in the insight-based narrative conditions rated the sweatshirt as higher on insight scores than those in the effort-based narrative conditions; and participants in the effort-based narrative conditions rated the sweatshirt as higher on effort scores than those in the insight-based narrative conditions.

The manipulation of the product description was successful as well. A two-way ANOVA on the bipolar manipulation check of the domain revealed a main effect of product description ($M_{Artistic}$ = 4.14, $SD_{Artistic}$ = 2.00; $M_{Scientific}$ = 4.79, $SD_{Scientific}$ = 2.46; $F(1,410) = 8.50$, $p = .004$, $\eta_p^2 = .02$). The main effect of creative process narrative ($F(1,410) = 2.11$, $p = .147$) and the interaction effect ($F(1,410) = 2.67$, $p = .11$) were not significant. Overall, participants in the artistic product conditions showed significantly lower scores than those in the scientific product conditions on the bipolar manipulation check.

A two-way ANOVA on product evaluations showed a significant creative process narrative × product description interaction ($F(1,410) = 18.85$, $p < .001$, $\eta_p^2 = .04$), whereas the main effects of creative process narrative and product description were not significant (Fs < 2.54). Planned comparisons revealed that, when the sweatshirt was described as an artistic product, an insight-based narrative produced better evaluations than an effort-based narrative ($M_{Insight}$ = 3.63, $SD_{Insight}$ = 1.54; M_{Effort} = 2.69, SD_{Effort} = 1.56; $F(1,410) = 17.62$, $p < .001$, $\eta_p^2 = .04$). When the sweatshirt was described as a scientific product, an effort-based description produced better evaluations than an insight-based description ($M_{Insight}$ = 2.81, $SD_{Insight}$ = 1.58; M_{Effort} = 3.24, SD_{Effort} = 1.74; $F(1,410) = 3.78$, $p = .05$, $\eta_p^2 = .01$).

A two-way ANOVA on WTP showed a significant creative process narrative × product description interaction ($F(1,410) = 15.00$, $p < .001$, $\eta_p^2 = .04$), whereas the main effects of creative process narrative and product description were not significant (Fs < 1). Planned comparisons revealed that, when the sweatshirt was described as an artistic product, an insight-based narrative produced higher WTP than an effort-based narrative ($M_{Insight}$ = £29.93, $SD_{Insight}$ = 19.99; M_{Effort} = £22.06, SD_{Effort} = 14.75; $F(1, 410) = 10.36$, $p = .001$, $\eta_p^2 = .03$). When the sweatshirt was described as a scientific product, an effort-based narrative produced higher WTP

than an insight-based narrative ($M_{Insight}$ = £22.82, $SD_{Insight}$ = 16.81; M_{Effort} = £28.34, SD_{Effort} = 18.39; $F(1,410) = 5.09$, $p = .025$, $\eta_p^2 = .01$). Figure 3 shows results of the two ANOVAs, which provide support to H2.

--- Figure 3 about here ---

To test the hypothesized mechanism underlying these effects, we estimated two moderated mediation models, in which the product (0 = scientific, 1 = artistic) moderated the path from the creative process narrative (0 = effort-based, 1 = insight-based) to lay theories on the associations between insight- / effort-based narratives and arts/sciences (hereafter: lay theories); and in which lay theories influenced evaluations and WTP. Before proceeding, we verified the discriminant validity between lay theories, evaluations and WTP estimating a confirmatory factor analysis. Results showed AVEs for constructs (AVE > .86) larger than all the squared correlations (r^2 < .14), thus suggesting discriminant validity (Fornell & Larcker, 1981; Pieters, 2017).

Results showed a significant creative process narrative × product interaction on lay theories ($b = 1.20$, $p < .001$). As lay theories were positively associated with both evaluations ($b = .35$, $p < .001$) and WTP ($b = 2.83$, $p < .001$), we found that, when the sweatshirt was described as an artistic product, the creative process narrative → lay theories → evaluations ($IE = .27$, 95% Bootstrap CI [.13, .45]), and the creative process narrative → lay theories → WTP ($IE = 2.19$, 95% Bootstrap CI [.96, 3.88]) indirect effects were both positive and significant. Conversely, when the sweatshirt was described as a scientific product, the creative process narrative → lay theories → evaluations ($IE = -.15$, 95% Bootstrap CI [- .33, - .01]), and the creative process narrative → lay theories → WTP ($IE = -1.22$, 95% Bootstrap CI [- 2.68, - .06]) indirect effects

were both negative and significant. In both the evaluations (ω = .42, 95% Bootstrap CI [.20, .70]) and WTP (ω = 3.41, 95% Bootstrap CI [1.64, 5.96]) models, the conditional indirect effects for artistic and scientific product conditions were significantly different from each other. Thus, the results of these moderated mediation analyses provide support to H3 and allow us to gather evidence for the lay theories-based mechanism driving the effects of the creative process narratives on evaluations of and WTP for new artistic and scientific products.

3.4 Study 3A

Having gathered support for the association between insight and arts and for the effect of insight-based narratives for artistic products, in study 3A we conducted a replication using a more prototypical artistic product. In addition, we tested whether the investigated effect is conditional on the level of consumers' domain-specific expertise, as predicted by H4a. We expected that expert consumers would be unlikely to base their evaluations of a new artistic product on lay theories. Therefore, we predicted that, as consumer expertise increases, the advantage of insight-based (over effort-based) narratives of the creative process is reduced.

Participants and procedure. One hundred and fifty-six participants based in the UK were recruited from the Prolific Academic panel (71.80% female; M_{age} = 32.92, SD_{age} = 10.65), and received £.60 as compensation. Before beginning the actual study, participants were administered an audio-test. They were asked to use an audio player to reproduce the sentence "*Mum went to the market and bought a bunch of red flowers*" and were asked to indicate the color of the flowers among ten alternatives. Participants who did not provide the correct answer were debriefed and could not proceed with the study. Participants who provided the correct answer were then randomly assigned to one of two creative process narrative conditions (insight-

based vs. effort-based), and read an interview in which a rock band, *Miss Fraulein*, described the creative process that led to their last song, *Now and Then*, either as insight-based or effort-based (the full texts of the interviews are available in Appendix B). Afterwards, they listened to a 45-second excerpt of the song, rated the song on a 7-point scale (1 = *do not like it at all*, 7 = *like it a lot*) and indicated how much they would pay to buy the song (WTP: from £0.00 to £5.00). Subsequently, participants answered the four items used in study 2 to measure the strength of their lay theories with reference to art ($\alpha = .95$), three 7-point Likert items about their expertise on rock music ("I am an expert on rock music", "I know a lot about rock music", "When listening to a rock song, I can often recognize the band who play it" – $\alpha = .88$) and the manipulation checks used in study 2 on the extents to which the song was the outcome of insight ($\alpha = .87$), and effort ($\alpha = .90$). Finally, they reported their age and gender. Before being debriefed and redirected to the form to get their compensation, participants were given the opportunity to listen to the full version of the song.

Results and discussion. Participants in the insight-based narrative condition rated the song as higher on insight scores than those in the effort-based narrative condition ($M_{Insight} = 5.35$, $SD_{Insight} = 1.37$; $M_{Effort} = 3.97$, $SD_{Effort} = 1.46$; $F(1,154) = 36.91$, $p < .001$, $\eta_p^2 = .19$), and as lower on effort scores than participants in the effort-based narrative condition ($M_{Insight} = 3.72$, $SD_{Insight} = 1.42$; $M_{Effort} = 5.30$, $SD_{Effort} = 1.13$; $F(1,154) = 59.19$, $p < .001$, $\eta_p^2 = .28$). Manipulation of the creative process narrative was therefore deemed successful.

Participants evaluated the song more favorably ($Liking_{Insight} = 4.00$, $SD_{Insight} = 1.37$; $Liking_{Effort} = 3.50$, $SD_{Effort} = 1.49$; $F(1,154) = 4.76$, $p = .031$, $\eta_p^2 = .03$) and were willing to pay more for it ($WTP_{Insight} = £.82$, $SD_{Insight} = .84$; $WTP_{Effort} = £.56$, $SD_{Effort} = .70$; $F(1,154) = 4.40$, $p = .038$, $\eta_p^2 = .03$) when it was described using an insight-based narrative than using an effort-based

narrative. We also found that participants who read the insight-based narrative listened to the full version of the song longer than participants who read the effort-based narrative ($Listening_{Insight}$ = 42.13, $SD_{Insight}$ = 69.48; $Listening_{Effort}$ = 23.36, SD_{Effort} = 44.42; $F(1,154) = 4.00$, $p = .048$, $\eta_p^2 = .03$.) This evidence was confirmed by a Welch robust F-test, which accounts for heteroskedasticity ($F(1,129.24) = 3.99$, $p = .048$.) These results show that an insight-based narrative of the creative process induces more favorable evaluations of artistic products, thus providing further support to H2a.

We then examined the role of expertise. Considering evaluations as dependent variable, the interaction between the creative process narrative (0 = effort-based, 1 = insight-based) and expertise was found to be negative ($b = -.32$, $p = .03$). More important, an application of the Johnson-Neyman technique revealed that the effect of the creative process narrative on evaluations was positive and significant (i.e., pro insight) for participants with an expertise score up to about the 53th percentile, but the same effect became non-significant beyond that level. A simple slope analysis (at expertise = M +/- 1SD) confirmed these results ($b_{LowExpertise} = 1.03$, $p = .001$; $b_{HighExpertise} = .05$, $p = .77$).

When considering WTP as dependent variable, we found a negative interaction between the creative process narrative and expertise ($b = -.13$, $p = .10$), but its p-value was just above the conventional threshold for marginal significance. Probing this interaction by means of the Johnson-Neyman technique, however, revealed a similar pattern to that found in the evaluations model. The effect of the creative process narrative on willingness to pay was positive and significant (i.e., pro insight) for participants with an expertise score up to about the 53th percentile, but the same effect becomes non-significant beyond that level. A simple slope analysis (at expertise = M +/- 1SD) confirmed this pattern of results ($b_{LowExpertise} = .48$, $p = .007$;

$b_{HighExpertise}$ = .07, p = .68.) Overall, these findings provide support to H4a and suggest that, as expertise increases, the effect of creative process narratives is reduced.

We then estimated two moderated mediation models in which expertise moderated the path from the creative process narrative (0 = effort-based, 1 = insight-based) to lay theories; and in which lay theories influenced evaluations and WTP. Results of a confirmatory factor analysis suggested discriminant validity between lay theories, evaluations and WTP (AVE > .81 and larger than all the squared correlations, r^2 < .20).

The results showed a negative creative process narrative × expertise interaction effect on lay theories (b = - .28, p = .02). As lay theories were positively associated with both evaluations (b = .32, p < .001) and WTP (b = .12, p = .02), we found that the creative process narrative → lay theories → evaluations and the creative process narrative → lay theories → WTP indirect effects were both positive and significant at the 10th, 25th, and 50th percentiles of the expertise distribution, but the same indirect effects became non-significant at the 75th and 90th percentiles of the expertise distribution. In both the evaluations (ω = - .09, 95% Bootstrap CI [- .23, - .01]) and WTP (ω = - .03, 95% Bootstrap CI [- .10, - .00]) models, the conditional indirect effects changed significantly along the expertise distribution. Table 1 synthesizes the results of the moderated mediation models, which offer further support to H3 for artistic products.

--- Table 1 about here ---

3.5 Study 3B

In study 3B we further investigated whether the association between effort and sciences produces more favorable evaluations of scientific products presented using an effort-based rather

than an insight-based narrative of the creative process. Additionally, we aimed to test H4b, which predicts that expertise moderates such effect because expert consumers will be less likely to base their evaluations of a new scientific product on lay theories.

Participants and procedure. One hundred and fifty-nine participants based in the UK were recruited from Prolific Academic (75% female; M_{age} = 33.33, SD_{age} = 10.66), and received £.60 as compensation. Participants were randomly assigned to one of two conditions (insight-based vs. effort-based narrative), and read a mock online article describing the development of a new 24-hour sunscreen, *OneDaySun*, by a group of scientists working for a company named *UltraSun*. The article described the creative process leading to the invention of the sunscreen either as insight-based or as effort-based. The two versions of the article are available in Appendix B.

Afterwards, participants rated the new sunscreen on a 7-point scale (1 = *do not like it at all*, 7 = *like it a lot*) and indicated how much they would pay for a 200ml bottle of the product (WTP). Subsequently, participants answered the four items used in study 2 to measure lay theories with reference to science (α = .97), three 7-point Likert items about their expertise on science ("I am an expert on science", "I know a lot about science", "My friends consider me an expert on science" – α = .93) and the manipulation checks used in previous studies on the extents to which the new sunscreen was the outcome of insight (α = .82), and effort (α = .95). Finally, they reported their age and gender.

Results and discussion. Participants in the insight-based narrative condition rated the new sunscreen as higher on insight scores than participants in the effort-based narrative condition ($M_{Insight}$ = 4.69, $SD_{Insight}$ = 1.36; M_{Effort} = 3.50, SD_{Effort} = 1.47; $F(1,157) = 28.17$, $p < .001$, η_p^2 = .15), and as lower on effort scores than participants in the effort-based narrative condition

($M_{Insight}$ = 3.92, $SD_{Insight}$ = 1.67; M_{Effort} = 5.63, SD_{Effort} = 1.17; $F(1,157) = 55.58$, $p < .001$, $\eta_p^2 = .26$). Manipulation of the creative process narrative was therefore deemed successful.

Participants evaluated the sunscreen more favorably ($Liking_{Insight}$ = 4.56, $SD_{Insight}$ = 1.62; $Liking_{Effort}$ = 5.52, SD_{Effort} = 1.44; $F(1,157) = 15.74$, $p < .001$, $\eta_p^2 = .09$) and were willing to pay more for it ($WTP_{Insight}$ = £7.78, $SD_{Insight}$ = 5.20; WTP_{Effort} = £9.81, SD_{Effort} = 5.63; $F(1,157) = 5.52$, $p = .020$, $\eta_p^2 = .03$) when it was described using an effort-based narrative than using an insight-based narrative. These results show that an effort-based narrative of the creative process induces more favorable evaluations of scientific products, and provide further support to H2b.

We then assessed the role of expertise. Considering evaluations as dependent variable, the interaction between the creative process narrative (0 = effort-based, 1 = insight-based) and expertise was found to be positive ($b = .35$, $p = .03$). More important, an application of the Johnson-Neyman technique revealed that the effect of the creative process narrative on evaluations was negative and significant (i.e., pro effort) for participants with an expertise score up to about the 79th percentile, but the same effect becomes non-significant beyond that level. A simple slope analysis (at expertise = M +/- 1SD) confirmed these results ($b_{LowExpertise}$ = - 1.49, $p < .001$; $b_{HighExpertise}$ = - .44, $p = .20$).

When considering WTP as dependent variable, we found a positive interaction between the creative process narrative and expertise ($b = .91$, $p = .11$), although it failed to reach significance. Probing this interaction by means of the Johnson-Neyman technique, however, revealed that the effect of the creative process narrative on willingness to pay was negative and significant (i.e., pro effort) for participants with an expertise score up to about the 66th percentile, but the same effect becomes non-significant beyond that level. A simple slope analysis (at expertise = M +/- 1SD) confirmed this pattern of results ($b_{LowExpertise}$ = - 3.40, $p = .006$; $b_{HighExpertise}$ = - .63, $p = .61$.)

Taken together, these results provide support to H4b and suggest that, as expertise increases, the effect of creative process narratives disappears.

We then estimated two moderated mediation models in which expertise moderated the path from the creative process narrative (0 = effort-based, 1 = insight-based) to lay theories; and in which lay theories influenced evaluations and WTP. Results of a confirmatory factor analysis proved discriminant validity between lay theories, evaluations and WTP (AVE > .89 and larger than all the squared correlations, $r^2 < .38$).

Results showed a positive creative process narrative × expertise interaction effect on lay theories ($b = .47$, $p = .008$). As lay theories were positively associated with both evaluations ($b = .51$, $p < .001$) and WTP ($b = .75$, $p = .003$), we found that the creative process narrative → lay theories → evaluations and the creative process narrative → lay theories → WTP indirect effects were both negative and significant at the 10th, 25th, 50th and 75th percentiles of the expertise distribution, but the same indirect effects became non-significant at the 90th percentile of the expertise distribution. In both the evaluations (ω = .24, 95% Bootstrap CI [.05, .46]) and WTP (ω = .35, 95% Bootstrap CI [.06, .88]) models, the conditional indirect effects changed significantly along the expertise distribution. Table 2 synthesizes results of moderated mediation models, which, considering scientific products, offer further support to H3.

--- Table 2 about here ---

4. General Discussion

The creative process includes both illuminating moments, in which the creator experiences a sudden, flashing intuition solving an impasse in the road toward new product ideation; and

moments of extensive work, during which creators organize ideas, develop them, test them out, and refine them to define a new product. The evidence from the content analysis of "The Creative Process" suggests that creators tend to emphasize more their intuition and illuminating experiences when promoting their new works, maybe because they think that insight is more appealing, salient, unique, and diagnostic of creativity (Kasof, 1995) and that emphasizing insight may induce more favorable reactions from the audience. This research clarifies, however, that consumers' beliefs on the nature of the creative process differ across domains. We show that consumers believe artistic products are more likely the outcome of insight and scientific products are more likely the outcome of effort. Importantly, we demonstrate that these associations represent lay theories that influence how consumers evaluate new products based on the narrative used to describe their creative processes. Artistic products receive more favorable evaluations when presented using insight-based narratives, whereas scientific products get better evaluations when presented using effort-based narratives. This pattern of results changes as the audience expertise increases, since more expert consumers are less likely to rely on lay theories to form their judgments of new products. In the remainder of this section we discuss the theoretical contribution of our research and some practical implications that can be drawn from our results.

4.1 Theoretical Contribution

The research presented in this paper is the first to reveal that consumers evaluate otherwise identical products differently depending on narratives attributing their creation to insight or effort, and that these evaluations are due to consumers' lay beliefs on what the genesis of a product should look like in a given domain. Our results contribute to a stream of research (e.g.,

Baas et al., 2015; Stenberg, 1985) that has focused on investigating beliefs about what are the characteristics of creativity and how these beliefs influence the evaluations of creative outputs. This literature suggests that people hold beliefs on the genesis of creative products (e.g., O'Connor et al., 2013; Runco & Bahleda, 1986), and that these beliefs can influence product evaluations due to reliance on stereotypical knowledge and heuristics (Levy et al., 1998; Sternberg, 1985). Earlier studies followed a dispositional approach, and focused on the characteristics of creative individuals. These studies (e.g., Katz & Giacommelli, 1982; MacKinnon, 1964) portray creative people as unconventional, risk-taking, inventive, and intuitive. Such conceptions influence creativity judgments (Runco, Johnson, & Bear, 1993), and may fuel other illusory correlations between creativity and genius, madness, and mental illness (Schlesinger, 2009). Following the idea that creativity is related to intuition and informal practices, Baas et al. (2015) found that people tend to associate a defocused and flexible mindset with higher product creativity. Based on their empirical results, the authors conclude that "people may overestimate the likelihood of creative ideas coming in a flash of insight and may underestimate the likelihood of creative ideas coming after deliberate and focused work" (Baas et al., 2015, 344).

Our research contributes to this literature by showing the existence of specific lay theories on the nature of creative process that consumers associate to different product domains, and by analyzing how these lay theories influence product evaluations and how their influence changes depending on the nature of the product, and on consumers' level of expertise. On the one hand, consumers associate artistic products, which are related to beauty and emotion (Bullot & Reber, 2013), with insight-based narratives of the creative process, which refers to intuition and spontaneity. On the other hand, consumers associate scientific products, which are related to

formalized procedures and effortful experimentation, with effort, which refers to deliberation and methodical work.

Furthermore, we contribute to a recent stream of work on the impact of information on a product's creation on consumer preference. These studies have highlighted how consumers' preference for virtually identical products may change when circumstances surrounding the product creation, such as the type of agent involved in the creation process, the accidental or planned nature of the process, the costs of the production, are disclosed to them (Fuchs et al., 2015; Nishikawa et al., 2017; Reich et al., 2017; Wang et al., 2019). We contribute to this body of work by showing that a novel factor, the nature of the creative process that led to the product, can also shift product preferences, and that this effect varies for different product domains and for consumers with different levels of expertise.

Our results also extend those of Kruger, Wirtz, Van Boven, and Altermatt (2004), who produced evidence that individuals use an effort heuristic to evaluate artistic products. According to their theory, products presented as the outcomes of more effort (manipulated as the number of hours to produce the work) receive higher evaluations due to a heuristic used by people to evaluate ambiguous products. Whereas Kruger et al. have focused on low versus high levels of effort, we extended their work by directly comparing the effects of effort and insight, the two major factors intervening in the creative process. Our studies on the activation of lay theories also address the critique that Cho and Schwarz (2008) moved to Kruger et al. (2004), arguing that their results were likely due to the activation of the naïve theory that good art takes effort, and that alternative lay theories can be activated. By measuring both insight and effort attributions in study 1A and 1B, we provide a more realistic assessment of the proposed lay theories.

4.2 Practical contribution

Providing information on the creative process leading to new products can produce several benefits for companies and creators. Product creation narratives are an increasingly relevant communication tool in several contexts, such as creative dissemination talks, crowdfunding campaigns (Brown et al., 2017; Lapowsky, 2015), or entrepreneurial pitching (Mason & Harrison, 2003). Our results show that crafting the right narrative is a critical activity, as the content of the message shared can influence relevant outcomes such as product preference and engagement, in particular when the target audience consists of non-experts. This means that our findings may help the identification of optimal communication strategies for companies presenting their artistic and scientific products in press interviews, crowdfunding platforms, social media messages and the likes. For artistic products, non-expert consumers are more inclined towards and more willing to buy a product when the insight leading to its development is featured in the narrative of the creative process; for scientific products, effort-based narratives induce the most favorable responses.

Our proposed boundary condition offers firms actionable guidelines on when and towards whom to apply different creative process narratives. The moderating effect of expertise indicates that it is important for companies to first identify high- versus low-expertise audiences. Whereas experts may rely on their more sophisticated knowledge structures to judge a new product, non-experts typically rely on heuristics. Novel ideas and products are evaluated by audiences with different levels of expertise, and therefore their promotion needs to be optimized for different publics (Holbrook, 1999), as liking from the mass and recognition from expert critics follow different paths (Dahr & Weinberg, 2016; Valsesia, Nunes, & Ordanini, 2016).

We show that companies presenting new products to a non-expert audience can benefit from matching their product genesis message to the prevalent lay theories held by consumers. Although communicating to experts is certainly important, as they often represent key industry players of gate keepers (investors, reporters, product reviewers, industry experts), dissemination of new creations to the general public (for example, on social media) and to policy makers is becoming increasingly relevant in both artistic and scientific domains. Based on our results, we prompt companies to emphasize illuminating experiences and intuition when presenting artistic products, and to emphasize the effortful process and the hard work involved when presenting scientific products to the general public.

In order to corroborate our empirical evidence with real-world data, we conducted a content analysis of art and science TED talks and quantified the extent to which speakers used insight-based and effort-based narratives in their talks. We tested whether these narratives influenced audience engagement, measured as a composite score of numbers of views, number of comments, and number of languages in which the talk was translated (for details, see Appendix C). Consistent with the results of our experiments, the use of insight-based narratives increased engagement for art talks but not for non-art talks, whereas the use of effort-based narratives increased engagement for science talks, but not for non-science talks.

The design of our studies makes our recommendations particularly relevant for artists and scientists communicating their creative processes in interviews and press releases, in printed and web/social media. Additionally, the results of study 3B, in which we manipulated narratives within a mock web article that follows closely the structure of *native advertising* (Wojdynski & Evans, 2016), suggest that narratives of the creative process can be used to maximize the favorability and persuasiveness of this innovative communication tool.

4.3 Limitations and directions for future research

As virtually any research, ours has limitations. First, following previous studies, we have mainly contrasted insight and effort as two distinct sources of creativity that can be emphasized in the communication process. However, it could be interesting to assess whether and how insight and effort can be integrated within the same communication attempt and to test the existence of an insight-effort interaction. To answer these questions, it may be important to manipulate insight and effort as continuous rather than categorical variables, and to test the effect of different combinations of the two factors. Second, we have not investigated differences in artists and scientists related to specific goals of distinctiveness from and association with the mainstream (Sirgy, 1982; Cattani & Ferriani, 2008). Future research may examine whether the tendency of artists and scientists to use insight and effort, respectively, in their communication exercises may vary depending on whether their goal is to distinguish themselves from or assimilate to stereotyped images. Finally, in our study we have not manipulated the communication medium. It could well be that specific information on the creative process and different domains of application fit to various extents with personal, impersonal, or social media. Therefore, future research may expand our framework to include specific predictions on the moderating effect of communication media.

An interesting result emerging from our studies seems worth discussing. When describing their creative processes, creators seem to hold a preference for insight-based narratives, as testified by both our quantitative content analyses (see Appendix A and C). It is possible that impression management motivations (e.g., Leary & Kowalski, 1990) are responsible for this tendency. Creators may prefer to emphasize insight, because it is more unique, romantic, and

related to genius in order to impress the audience (Baas et al., 2015; Runco, 2004). It would be interesting to replicate this result and examine creator-audience discrepancies in the framing of and response to product creation narratives.

In conclusion, our research provides a comprehensive view on the associations between insight and effort and artistic and scientific domains, which can stimulate further research on implicit theories of creativity and prompt the more effective definition of narratives of the creative process.

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Footnotes

[1] http://www.collinsdictionary.com/dictionary/english/the-arts, accessed on November 16, 2017.

[2] http://www.collinsdictionary.com/dictionary/english/science, accessed on November 16, 2017.

[3] The full sets of stimuli for studies 1A and 1B are available from the first author upon request.

TABLES

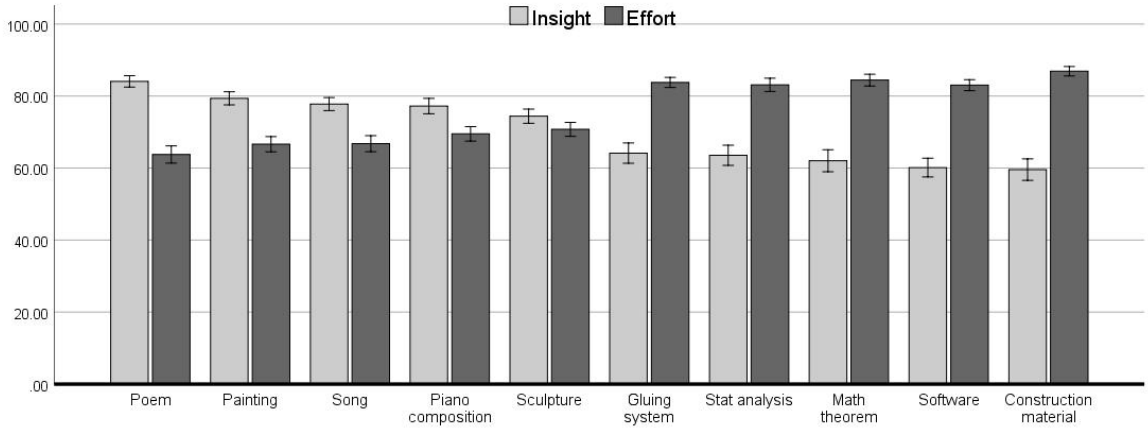
Expertise	Evaluations model			WTP model		
	Indirect Effect	Bootstrap LLCI	Bootstrap ULCI	Indirect Effect	Bootstrap LLCI	Bootstrap ULCI
1.33 (10th percentile)	.313	.101	.684	.116	.023	.295
2.00 (25th percentile)	.253	.086	.545	.094	.020	.237
3.33 (50th percentile)	.133	.027	.317	.050	.007	.140
4.67 (75th percentile)	.013	-.179	.189	.005	-.065	.078
5.33 (90th percentile)	-.047	-.330	.151	-.017	-.143	.050

Table 1 Indirect effects of creative process narrative on evaluations and WTP via lay theories, conditional on expertise (Study 3A)

Expertise	Evaluations model			WTP model		
	Indirect Effect	Bootstrap LLCI	Bootstrap ULCI	Indirect Effect	Bootstrap LLCI	Bootstrap ULCI
1.00 (10th percentile)	- 1.005	- 1.551	- .552	- 1.483	- 2.984	- .514
1.33 (25th percentile)	- .925	- 1.422	- .525	- 1.366	- 2.718	- .470
2.00 (50th percentile)	- .766	- 1.188	- .444	- 1.130	- 2.247	- .398
3.67 (75th percentile)	- .367	- .797	- .040	- .543	- 1.408	- .073
5.00 (90th percentile)	-.049	- .642	.476	-.072	- 1.001	.755

Table 2 Indirect effects of creative process narrative on evaluations and WTP via lay theories, conditional on expertise (Study 3B)

FIGURES



Note: Error bars ± 1 SE

Figure 1 Insight and Effort Scores for Artistic and Scientific Products (Study 1A)

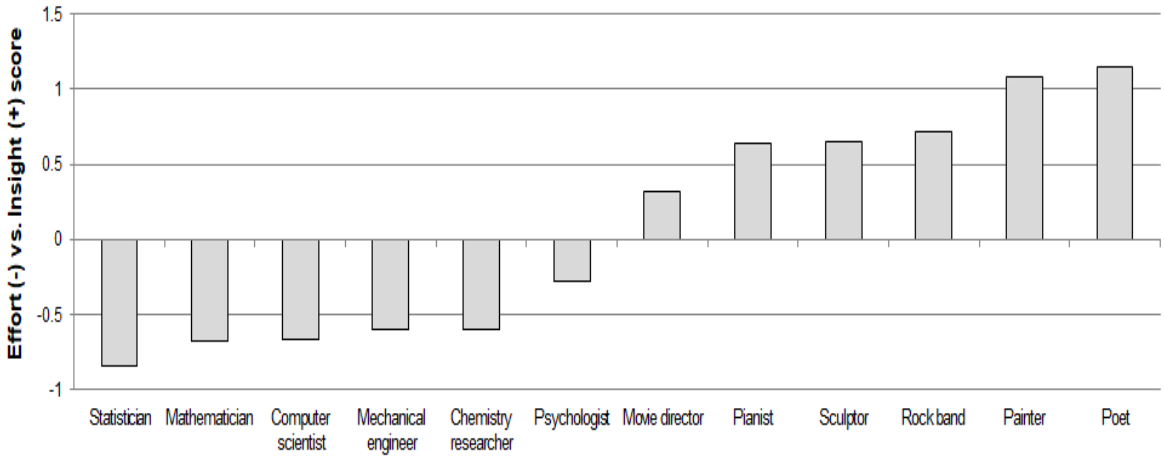


Figure 2 Insight vs. Effort Scores for Artists and Scientists (Study 1B)

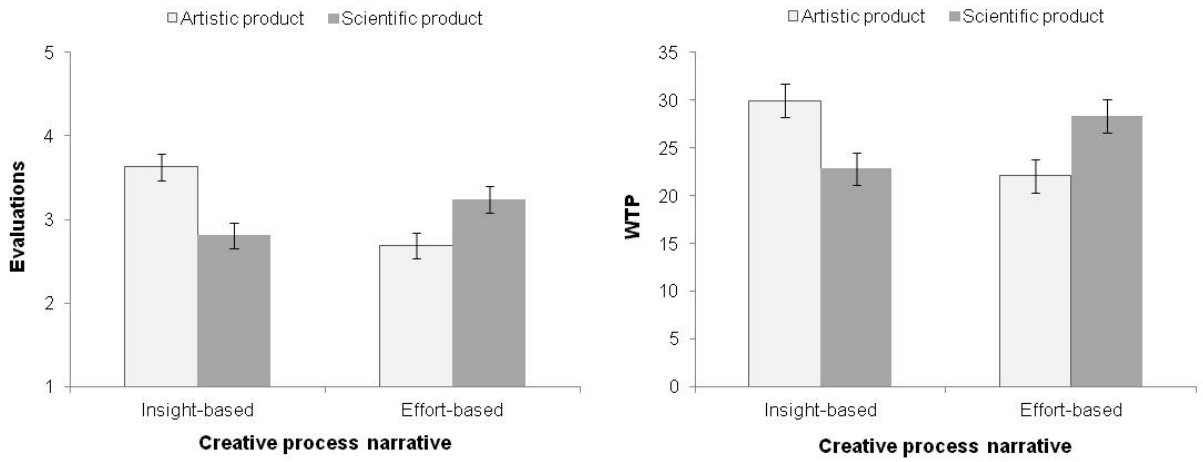


Figure 3 Results of ANOVAs on Evaluations and WTP (Study 2)

Appendix A – A content analysis of "The Creative Process," edited by Brewster Ghiselin

"The Creative Process" includes texts (essays or letters) written by 31 artists (e.g., Mozart, van Gogh, Wordsworth) and 7 scientists (e.g., Poincaré, Einstein, Jung) describing the mental and practical activities leading to their creative outputs. The 38 chapters (one for each creative individual) were analyzed through the *Linguistic Inquiry and Word Count* (LIWC) software (Pennebaker, Booth, Boyd, & Francis, 2015). We created customized dictionaries for the insight and effort concepts, starting from the word-stems that are commonly associated with these two constructs in the literature (e.g., Schooler et al., 1995; Baas et al., 2013; Lucas & Nordgren, 2015). As suggested in the text mining literature (Humphreys & Wang, 2018), we integrated the initial lists of word-stems with a search of relevant synonyms on English dictionaries. At the end of this process, we built a 35-word-stem dictionary for insight and a 35-word-stem dictionary for effort, reported in table A1.

Word-stems for Insight			***Word-stems for Effort***		
*accident** [e]	*imag** [e]	*serendip**	*algorit**	*intention** [e]	*revis**
*chance** [e]	*impetu** [e]	*shock**	*attempt**	*labor** [e]	*rigor** [e]
*daydream** [e]	*improvis** [e]	*sleep**	*commission**	*logic**	*schedul** [e]
*dream** [e]	*impuls** [e]	*spontane** [e]	*concentr** [e]	*method** [e]	*schemat** [e]
*emotion** [e]	*insight** [e]	*straight**	*conscious** [e]	*meticul** [e]	*study** [e]
*evok**	*inspir** [e]	*subconscious** [e]	*deliber** [e]	*order** [e]	*sweat**
*fantas** [e]	*instant** [e]	*sudden** [e]	*detail**	*organiz** [e]	*test**
*flash** [e]	*instinct** [e]	*unconscious** [e]	*effort** [e]	*plan** [e]	*training**
*flow**	*intuit** [e]	*unexpect**	*endeav**	*practic**	*trial** [e]
*fluen**	*muse**	*vision** [e]	*exercis**	*program** [e]	*verif**
*gut**	*revelat**	*vivid** [e]	*focus** [e]	*rational** [e]	*zeal** [e]
*illumin** [e]	*sensat** [e]		*hard-work** [e]	*reason** [e]	

Notes: The "*" subscript implies a word-stem, accounting for all words with that common root; The "e" subscript stands for "validated by experts".

Table A1 Word-stems for Insight and Effort

Based on the customized dictionaries, LIWC 2015 computed insight and effort scores for each chapter/creator as the ratio between the number of word-stems count and the total number of words in the text, multiplied by 100. We found that creators used more frequently insight-related words than effort-related words ($M_{Insight}$ = .98, M_{Effort} = .72, $t(37) = 1.77$, $p = .08$). This evidence was confirmed when we applied a non-parametric test to account for the small sample and non-normality of the data (Wilcoxon $z = 1.85$, $p = .06$).

To validate our results, we asked three experts in consumer behavior and marketing to assess the dictionaries of insight and effort that we developed based on definitions of the concepts and synonyms search. Experts were provided with definitions of insight and effort and a list of 90 word-stems, including the 70 word-stems used to measure insight and effort and 20 decoy word-stems related to the general construct of creativity (e.g., creativ*, diverg*, genius*, novel*). We asked experts to indicate for each word-stem if it was related to insight, effort, or neither of them. Twenty-four out of the 35 insight-related word-stems were associated with insight, and 22 out of the 35 effort-related word-stems were associated with effort by all the three experts. The validated word-stems are marked with an "e" subscript in table A1.

When applying the dictionaries validated by the three experts, the difference between insight and effort was even clearer ($M_{Insight}$ = .76, M_{Effort} = .49, $t(37) = 3.17$, $p = .003$; Wilcoxon $z = 3.13$, $p = .002$). A mixed two-way ANOVA with insight/effort as a within-subject variable and domain (arts vs. sciences) as a between-subject variable suggested that the prevalent use of insight-related words is not moderated by the domain ($F(1,36) = .28$, $p = .60$).

Appendix B – Manipulations used in the experimental studies

Study 2

Insight-art press release

Introducing the new Wave Sweatshirt by Akrys Design

Seeing a visual representation of the chromatic spectrum was the sudden illuminating experience that provided the team of artists at Akrys with the inspiration to create the new Wave Sweatshirt. The insight behind the garment came unexpectedly, in a sort of "A-ha!" experience.

James Norton, the Director at Akrys, emphasized how the artistic background of the team was important in developing the new Wave Sweatshirt, which, in his own words, "*is a truly artistic product*".

Insight-science press release

Introducing the new Wave Sweatshirt by Akrys Design

Seeing a visual representation of the chromatic spectrum was the sudden illuminating experience that provided the team of scientists at Akrys with the inspiration to create the new Wave Sweatshirt. The insight behind the garment came unexpectedly, in a sort of "A-ha!" experience.

James Norton, the Director at Akrys, emphasized how the scientific background of the team was important in developing the new Wave Sweatshirt, which, in his own words, "*is a truly scientific product*".

Effort-art press release

Introducing the new Wave Sweatshirt by Akrys Design

Examining hundreds of representations of the chromatic spectrum and meticulously studying their structure helped the team of artists at Akrys to create the new Wave Sweatshirt. The project for the garment followed a detailed plan and was developed in an effortful manner, based on several revisions of the initial idea.

James Norton, the Director at Akrys, emphasized how the artistic background of the team was important in developing the new Wave Sweatshirt, which, in his own words, "*is a truly artistic product*".

Effort-science press release

Introducing the new Wave Sweatshirt by Akrys Design

Examining hundreds of representations of the chromatic spectrum and meticulously studying their structure helped the team of scientists at Akrys to create the new Wave Sweatshirt. The project for the garment followed a detailed plan and was developed in an effortful manner, based on several revisions of the initial idea.

James Norton, the Director at Akrys, emphasized how the scientific background of the team was important in developing the new Wave Sweatshirt, which, in his own words, "*is a truly scientific product*".

Study 3A

Insight-based interview

Miss Fraulein, pure rock with style.
By Tim White

Miss Fraulein is an alternative rock band from Cosenza, Italy. Their sound shows influences from the '60's psychedelia, american low-fi, and is coupled with hypnotic and raving lyrics. A genuine live band, they love to go on stage as often as they can. After "A professional dinner out" (2003) and "Tob was my Monkey" (2008), they have just released "A secret bond", their powerful and melodic third album.

Tim: What are your expectations for the new album?

Miss Fraulein: We really look forward to playing the new songs live. We believe they are the best songs we have written so far and that they show the evolution of the band as a whole.

Tim: You have chosen "Now and then" as a first single. How was it written?

Miss Fraulein: Silvio (the bass player) wrote the song spontaneously, in a pure flow of inspiration in which he imagined in his mind the development of the love-story between a boy and a girl. He had this sort of dreamlike, illuminating experience during which he visualized in his mind images and ideas that became the words and music riff of "Now and then". We all liked the song and decided it would have been the first single from the album.

Effort-based interview

Miss Fraulein, pure rock with style.
By Tim White

Miss Fraulein is an alternative rock band from Cosenza, Italy. Their sound shows influences from the '60's psychedelia, american low-fi, and is coupled with hypnotic and raving lyrics. A genuine live band, they love to go on stage as often as they can. After "A professional dinner out" (2003) and "Tob was my Monkey" (2008), they have just released "A secret bond", their powerful and melodic third album.

Tim: What are your expectations for the new album?

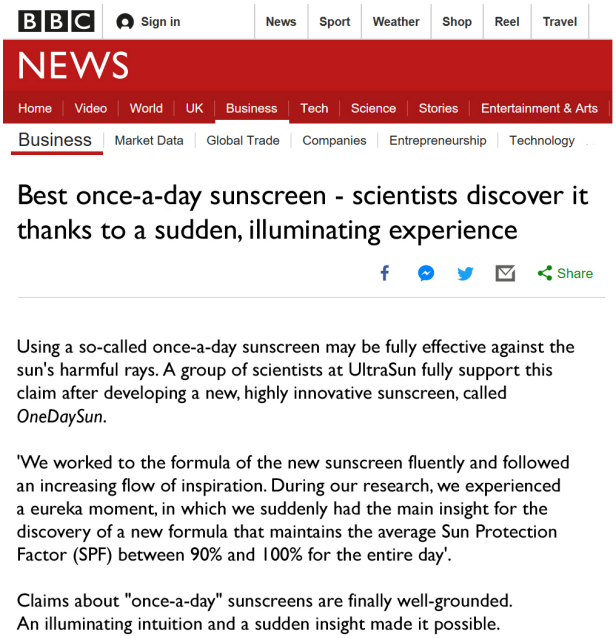
Miss Fraulein: We really look forward to playing the new songs live. We believe they are the best songs we have written so far and that they show the evolution of the band as a whole.

Tim: You have chosen "Now and then" as a first single. How was it written?

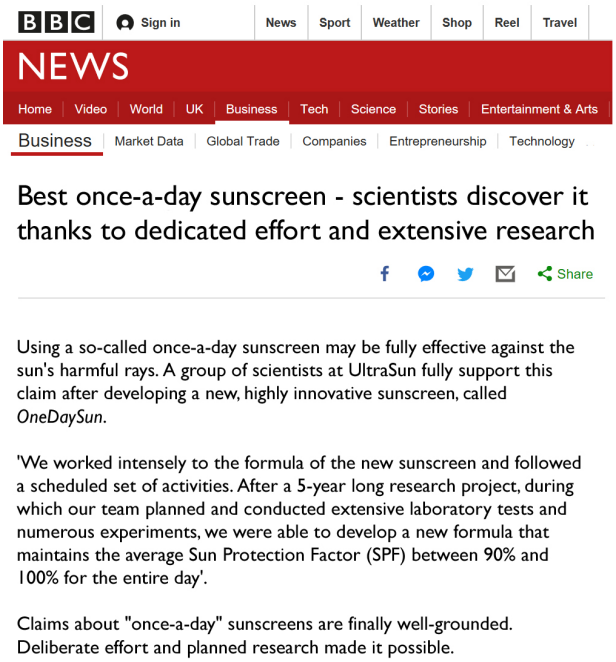
Miss Fraulein: Silvio (the bass player) wrote the song based on the plan of describing the development of the love-story between a boy and a girl. He tried over and over different words and riffs, following a schematic approach. He had an organized agenda and followed it closely by rehearsing continuously each part of the song and taking systematically care of each detail. We all liked the song and decided it would have been the first single from the album.

Study 3B

Insight-based article



Effort-based article



Appendix C – A content analysis of TED Talks on creativity

We analyzed real-world data to gather further support for our conceptual framework. Specifically, we used data on TED talks to verify whether insight-based and effort-based narratives used by speakers influence consumer responses in the form of consumer engagement. Additionally, we investigated if the effect of the type of narrative of the creative process is conditional on the art and science tags to the talks.

Data and variables. We analyzed a dataset freely available on the website https://www.kaggle.com/rounakbanik/ted-talks. The data were scraped by Rounak Banik, a data scientist and contributor at kaggle.com, and include two csv files featuring: *i*) Full transcripts of all TED talks up to September 21, 2017 ($N = 2467$); and *ii*) Tags, numbers of views, comments, languages in which the talk was translated, and descriptive data (date of publishing, speaker, title, etc.) for each talk. The dataset achieved a score of 8.8/10 on usability on the www.kaggle.com website. We cross-checked a subset of the data by comparing them with the corresponding web pages. Data proved to be accurate and suitable for our analysis. We organized the data in a unique worksheet and used tags (e.g., culture, business, society) to select talks on the creative process of new products. Using the tag *creativity*, we selected 182 talks. Of these, two talks were musical performances and had no text transcripts, and were therefore excluded, leaving a final sample of 180 talks for analysis.

Our dependent variable, *consumer engagement*, was measured using data on the numbers of views, number of comments, and number of languages in which the talk was translated ($\alpha = .83$, rs $> .45$). These three variables were normalized by dividing each score by the number of days in which the talk was available online. A principal component analysis (PCA) on the normalized variables yielded a component explaining 75.93% of variance (using the original

variables produced similar results). Accordingly, we computed a standardized PCA *consumer engagement* score.

To measure the independent variables, insight and effort, we used the *Linguistic Inquiry and Word Count* (LIWC) software (Pennebaker, Booth, Boyd, & Francis 2015) to quantify the extent to which speakers used insight-based and effort-based narratives in their talks. We used the customized dictionaries for the insight and effort concepts described in Appendix A.

To operationalize the moderating variables, we used the tags of the talks, which include "art" (n = 47), "science" (n = 16), and "art and science" (n = 8). Based on these tags, we created two independent dummy variables: art and science (1 = *yes*, 0 = *no*).

Descriptive statistics for all the variables are reported in table C1. Consistent with the evidence reported in Appendix A on the content analysis of "*The Creative Process*," we found that speakers employed insight-based narratives more frequently than effort-based narratives ($M_{Insight}$ = .42, M_{Effort} = .34, $t(179) = 2.47$, $p = .01$).

Variables	Mean	SD	1	2	3	4	5
1. Consumer engagement (PCA score)	0.00	1.00	1.00				
2. Insight	.42	.34	.16*	1.00			
3. Effort	.34	.28	- .02	.04	1.00		
4. Art	.28	.45	.16*	.12	- .21**	1.00	
5. Science	.12	.32	- .10	.12	.18*	.12	1.00

** $p < .01$, * $p < .05$

Table C1 Descriptive statistics

Results. We first estimated a linear model in which engagement was regressed onto insight, effort, art, and science (model 1 – see table C2). Since this model suffered from heteroskedasticity (Breusch-Pagan/Cook-Weisberg test: $\chi^2(4) = 75.02$, $p < .001$), we estimated all the models with robust standard errors.

Independent Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	- .28	- .11	- .26	- .09	- .30 °
Insight	.45 °	.04	.52 °	.11	.50
Effort	.12	.10	- .05	- .04	.17
Art	.37	- .24	.38 °	- .22	.37 °
Science	- .45 *	- .47 **	- .92 **	- .88 **	- .46 **
Insight × Art		1.32 *		1.29 *	
Effort × Science			1.01 *	.86 *	
Insight × Effort					- .13
R^2	.06	.11	.07	.11	.06

Unstandardized estimates are reported.
Tests are based on standard errors robust to heteroskedasticity.
° $p < .10$, * $p < .05$, ** $p < .01$

Table C2 Results of regression analyses

The results of model 1 show a marginally significant effect of insight ($b = .45$, $p = .096$) and a significant effect of science ($b = -.45$, $p = .011$) on consumer engagement. We then tested the hypothesized moderation of art on the effect of insight, and of science on the effect of effort. Model 2 included the insight × art interaction, which proved to be positive and significant ($b = 1.32$, $p = .04$). A simple slope analysis revealed that the effect of insight on consumer engagement was positive for art talks ($b = 1.36$, $p = .03$) but not for non-art talks ($b = .04$, $p = .83$). Model 3 included the effort × science interaction, which was positive and significant ($b = 1.01$, $p = .02$). A simple slope analysis revealed that the effect of effort on consumer engagement was positive for science talks ($b = .96$, $p = .01$) but not for non-science talks ($b = -.05$, $p = .86$). The two hypothesized moderation effects were positive and significant even when both interaction terms were included in the regression analysis (model 4). These results offer further support to H2 using real-world data.

Studies 2, 3A, and 3B treated insight-based and effort-based as opposite and competing types of narratives. One might question whether the two types of narratives interact with each other in determining consumer responses to narratives of the creative process. Therefore, we tested the insight × effort interaction in Model 5, the results of which showed that the two types of narratives do not interact with each other (b = - .13, p = .94). This result provides preliminary evidence that insight and effort tend to have independent effects on consumer responses to narratives of the creative process, and that these effects are conditional on the artistic *vs.* scientific domain.

Robustness test. To validate our results, we re-run the analyses using the dictionaries validated by experts (see Appendix A for details). Results were basically unchanged, with all substantial and statistical conclusions remaining stable. This additional evidence increases confidence in the stability of the results.

Discussion. We content-analyzed a sample of TED talks to verify the effects of insight-based and effort-based narratives on consumer engagement using real-world data. The results corroborate those of the experiments reported in the paper in providing support to our hypothesis predicting that artistic products are evaluated more favorably when promoted with insight-based narratives than with effort-based narratives, and scientific products are evaluated more favorably when promoted with effort-based narratives than with insight-based narratives. The use of insight-based narratives increased engagement for art talks but not for non-art talks, whereas the use of effort-based narratives increased engagement for science talks, but not for non-science talks. Although these interaction effects replicate those obtained in the experiments, they require caution since the data examined in this study are correlational in nature, and the study has limited power given the sample of talks available.